Driver Fatigue and Distraction Monitoring and Warning System

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The official link for this solicitation is: http:/www.volpe.dot.gov/sbir

Agency:
Department of Transportation

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Description:

Driver fatigue and driver distraction are recognized as a continuing safety issue for commercial drivers. Driver fatigue is a major cause of CMV crashes, but fatigue causes are not well understood. Distraction-affected crashes were reported in ten percent of fatal crashes, 18 percent of injury crashes, and 16 percent of all motor vehicle traffic crashes in 2012 according to the National Highway Traffic Safety Administration. The mission of the Federal Motor Carrier Safety Administration (FMCSA) is to reduce fatalities and injuries associated with truck and bus crashes. Driver Fatigue and Distraction Monitoring and Warning Systems have been developed; however, the systems are not always reliable and accurate in the operating environment. Driver Fatigue and Distraction Monitoring and Warning Systems are systems designed to monitor truck and bus drivers and to recognize and mitigate driver fatigue and distraction with the goal of warning drivers and reducing fatigue-related and distraction-related driving errors. These systems meet FMCSA's strategic goal that requires carriers to maintain high safety standards.

The Driver Fatigue and Distraction Monitoring and Warning System will likely contain several measures to identify fatigue. There are physiological measures such as PERCLOS. PERCLOS is the percent closure of the driver's eyelids. Facial mapping will be used to detect PERCLOS as well as eyes off forward roadway. Another measure uses vehicle kinematics for lane tracking. The system warns the driver when he or she is deviating from the travel lane. Multiple measures of fatigue are

desirable to create a more reliable system. In addition, an appropriate human-machine interface will be developed for warning drivers. The Driver Fatigue and Distraction Monitoring and Warning System can also be used to alert the carrier that the driver is fatigued.

Expected Phase I Outcomes:

The Phase I SBIR project should complete a proof of concept for successfully implementing a new Driver Fatigue and Distraction Monitoring and Warning System in an operational environment. It is not sufficient to simply evaluate currently available systems. The deliverable must address reliability and accuracy of the new system.

Expected Phase II Outcomes:

The Phase II SBIR project will have a fully operational system successfully implemented at selected carriers. The system must be reliable and accurate in the operational environment.